

Claims

What is claimed is:

- [c1] A method of schema replication in a directory server, comprising:
updating a schema at a replication supplier;
computing a change sequence number;
placing the change sequence number in an attribute on the replication supplier;
initiating a replication session to a replication consumer;
reading the change sequence number on the replication consumer;
updating the schema on the replication consumer if the change sequence number
on the replication consumer is less than the change sequence number on the
replication supplier; and
propagating a schema update from the replication supplier to each replication
consumer.
- [c2] The method of claim 1, further comprising:
replacing contents of a schema entry on each replication consumer with contents
of a schema entry on the replication supplier.
- [c3] The method of claim 3, wherein contents are replaced using an update operation
on the schema entry.
- [c4] The method of claim 1, further comprising:
maintaining the schema on a master supplier server.
- [c5] The method of claim 4, further comprising:
copying the schema to a plurality of servers after updating the master supplier.
- [c6] The method of claim 1, further comprising:
holding the change sequence number on the replication consumer in an attribute.

- [c7] The method of claim 1, further comprising:
querying the schema with standard Lightweight Directory Access Protocol operations.
- [c8] The method of claim 1, further comprising:
modifying the schema with standard Lightweight Directory Access Protocol operations.
- [c9] The method of claim 1, wherein the schema is updateable on an updateable master.
- [c10] A method of schema replication in a directory server, comprising:
updating a schema at a replication supplier;
computing a change sequence number;
placing the change sequence number in an attribute on the replication supplier;
initiating a replication session to a replication consumer;
reading the change sequence number on the replication consumer;
updating the schema on the replication consumer if the change sequence number on the replication consumer is less than the change sequence number on the replication supplier;
propagating a schema update from the replication supplier to each replication consumer;
replacing contents of a schema entry on each replication consumer with contents of a schema entry on the replication supplier;
maintaining the schema on a master supplier server;
copying the schema to a plurality of servers after updating the master supplier;
holding the change sequence number on the replication consumer in an attribute;
querying the schema with standard Lightweight Directory Access Protocol operations; and

modifying the schema with standard Lightweight Directory Access Protocol operations.

- [c11] A method of defining a schema in a directory server, comprising
identifying an object class in the schema;
placing the object class on an entry;
storing a data element in an attribute in the directory server used by the schema;
extending the schema with a new object class and a new attribute;
describing a document with a private field comprising a description of the object
class and the attribute; and
representing the data element as an attribute-data pair.
- [c12] The method of claim 11, further comprising:
defining the object class in the directory server;
storing the object class in the directory server; and
maintaining integrity of the data element stored in the directory server is by
imposing constraints on data values.
- [c13] The method of claim 11, wherein the object class defines allowed attribute types
and required attribute types.
- [c14] The method of claim 11, wherein the attribute is multi-valued.
- [c15] The method of claim 11, wherein the attribute is single-valued.
- [c16] The method of claim 11, wherein the private field is a human-readable description.
- [c17] The method of claim 11, wherein the attribute-data pair comprises a descriptive
attribute associated with a data element.
- [c18] The method of claim 11, wherein the entry in the directory server is customizable.

- [c19] The method of claim 11, wherein the attribute available for the entry in the directory server is customizable.
- [c20] A method of defining a schema in a directory server, comprising
identifying an object class in the schema;
placing the object class on an entry;
storing a data element in an attribute in the directory server used by the schema;
extending the schema with a new object class and a new attribute;
describing a document with a private field comprising a description of the object
class and the attribute;
representing the data element as an attribute-data pair;
defining the object class in the directory server;
storing the object class in the directory server; and
maintaining integrity of the data element stored in the directory server by
imposing constraints on data values.
- [c21] A computer system for schema replication a directory server, comprising:
a processor;
a memory; and
software instructions stored in the memory for enabling the computer system
under control of the processor, to perform:
updating a schema at a replication supplier;
computing a change sequence number;
placing the change sequence number in an attribute on the replication
supplier;
initiating a replication session to a replication consumer;
reading the change sequence number on the replication consumer;

updating the schema on the replication consumer if the change sequence number on the replication consumer is less than the change sequence number on the replication supplier; and
propagating a schema update from the replication supplier to each replication consumer.

[c22] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

replacing the contents of a schema entry on each replication consumer with contents of a schema entry on the replication supplier using an update operation.

[c23] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

maintaining the schema on a master supplier server.

[c24] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

copying the schema to a plurality of servers after updating the master supplier.

[c25] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

holding the change sequence number on the replication consumer in the attribute.

[c26] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

querying the schema with standard Lightweight Directory Access Protocol operations.

[c27] The computer system of claim 21, wherein the software instructions further comprise instructions to perform:

modifying the schema with standard Lightweight Directory Access Protocol operations.

[c28] An apparatus for replicating a schema in a directory server, comprising:
means for updating a schema at a replication supplier;
means for computing a change sequence number;
means for placing the change sequence number in an attribute on the replication supplier;
means for initiating a replication session to a replication consumer;
means for reading the change sequence number on the replication consumer;
means for updating the schema on the replication consumer if the change sequence number on the replication consumer is less than the change sequence number on the replication supplier; and
means for propagating a schema update from the replication supplier to each replication consumer.

[c29] An apparatus for defining a schema in a directory server, comprising:
means for identifying an object class in the schema;
means for placing the object class on an entry;
means for storing a data element in an attribute in the directory server used by the schema;
means for extending the schema with a new object class and a new attribute;
means for describing a document with a private field comprising a description of the object class and the attribute; and
means for representing the data element as an attribute-data pair.

[c30] The apparatus of claim 29, further comprising:
means for defining the object class in the directory server;
means for storing the object class in the directory server; and

means for maintaining integrity of the data element stored in the directory server
by imposing constraints on data values.